

What is claimed is:

Sub a1
1 1. An optical reader for scanning and decoding at least
2 one optically encoded symbol, the optical reader comprising:
3 a program loading component operative to store an
4 externally generated program in the optical reader;
5 and
6 a program execution component coupled to the program
7 loading component, the program execution component
8 being operative to execute the externally generated
9 program stored in the optical reader to thereby
10 perform a predetermined task in accordance with the
11 externally generated program.

12 2. The optical reader of claim 1, wherein the program
13 loading component and the program execution component are
14 comprised of a programmable controller.

15 3. The optical reader of claim 2, wherein the
16 programmable controller comprises an ASIC.

17 4. The optical reader of claim 2, wherein the
18 programmable controller comprises a microprocessor device.

19 5. The optical reader of claim 1, further comprising a
20 communications interface coupled to the program loading
21 component and an external device, the communications interface
22 being adapted to transmit the externally generated program to
23 the program loading component by communicating with the
24 external device.

1 6. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes at
4 least one copper transmission wire.

1 7. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes a
4 wireless device.

1 8. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes an
4 RF device.

1 9. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes an
4 RS-232 compatible device.

1 10. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes a
4 computer networking device.

1 11. The optical reader of claim 10, wherein the computer
2 networking device is an Ethernet device.

1 12. The optical reader of claim 5, wherein the
2 communications interface is adapted to communicate with the
3 external device over a transmission facility that includes at

4 least one optical fiber.

1 13. The optical reader of claim 1, wherein the external
2 device includes a computer.

1 14. The optical reader of claim 1, wherein the external
2 device includes a machine readable diskette.

1 15. The optical reader of claim 1, wherein the external
2 device includes a CD-ROM.

Sub 2
1 16. An optical reader for scanning-decoding at least one
2 optically encoded symbol, the optical reader comprising:
3 a communications interface adapted to communicate with an
4 external device;
5 an imaging assembly for scanning the at least one
6 optically encoded signal to thereby produce digital
7 imaging data; and
8 processing means for,
9 receiving the digital imaging data from the imaging
10 assembly,
11 decoding the digital imaging data in accordance with
12 an optical reader program stored in an optical
13 reader memory,
14 loading an externally generated program into the
15 optical reader memory via the communications
16 interface, the externally generated program
17 corresponding to a new task, and
18 executing the externally generated program to
19 thereby perform the new task.

1 17. The optical reader of claim 16, wherein the step of
2 executing the externally generated program includes replacing
3 a portion of the optical reader program.

1 18. The optical reader of claim 16, wherein the step of
2 executing the externally generated program includes replacing
3 all of the optical reader program.

1 19. A method for instructing an optical reader to
2 perform a task it is not programmed to perform, the method
3 comprising:
4 loading an externally generated program into a memory
5 located in the optical reader; and
6 executing the externally generated program to perform the
7 task.

1 20. The method of claim 19 wherein the externally
2 generated program comprises a diagnostic application program.

1 21. The method of claim 19, wherein the externally
2 generated program includes a reprogramming routine for loading
3 a second externally generated program into the optical reader.

4 22. The method of claim 21, wherein the reprogramming
5 routine further comprises;
6 receiving a line of code of the second externally
7 generated program from an external programming
8 source;
9 checking the correctness of the line of code; and
10 storing the correct line of code to an erased portion of
11 EROM located in the optical reader.

1 23. The method of claim 22, wherein the correctness of
2 the line of code is checked by performing a checksum
3 operation.

1 24. The method of claim 22, wherein external programming
2 source is transmitted a negative acknowledgment if the line of
3 code is incorrect.

1 25. The method of claim 24, wherein the step of
2 receiving is repeated if the line of code is incorrect.

1 26. The method of claim 22, wherein the steps of
2 receiving, checking, and storing are repeated until the last
3 line of the externally generated application program is stored
4 in EROM.

1 27. A set of program interfaces tangibly embodied on a
2 computer-readable medium, the program interfaces being
3 executable on a computer in conjunction with a computer
4 program that controls an optical reader, the set of program
5 interfaces comprising:

6 a first interface that receives a load command, and
7 program code from an externally generated program,
8 the interface returning an acknowledgment indicating
9 whether the externally generated program was
10 successfully loaded; and

11 a second interface that receives the acknowledgment, the
12 second interface directing the computer to execute
13 the externally generated program in response to the
14 acknowledgment.

1 28. The set of program interfaces of claim 27, wherein
2 the load command is an externally generated command.

1 29. The set of program interfaces of claim 28, wherein
2 the externally generated command is an interrupt command.

1 30. The set of program interfaces of claim 27, wherein
2 the externally generated program is a diagnostic program for
3 testing the optical reader.

1 31. The set of program interfaces of claim 27, wherein
2 the externally generated program is a routine for
3 reprogramming the optical reader.

1 32. The set of program interfaces of claim 31, wherein
2 the routine further comprises a third interface that receives
3 a computer program code for controlling the optical reader,
4 the third interface returning at least one acknowledgment
5 indicating whether the computer program code for controlling
6 the optical reader was successfully loaded.

1 33. The set of program interfaces of claim 32, wherein
2 the third interface returns an error message when the routine
3 for reprogramming the optical printer is unsuccessful.

1 34. A reprogrammable optical reader system, comprising:
2 a programming source having at least one software
3 program, the at least one software corresponding to
4 a predetermined task;

5 a transmission facility coupled to the programming source
6 for transmitting the at least one software program;
7 and
8 an optical reader coupled to the transmission facility,
9 whereby the optical reader receives and executes the
10 at least one software program to thereby perform the
11 predetermined task.

1 35. The system of claim 34, wherein the optical reader
2 further comprises:
3 a communications interface connected to the transmission
4 facility, the communications interface operative to
5 receive the software program;
6 a program loading component coupled to the communications
7 interface, the program loading component operative
8 to store the software program in the optical reader;
9 and
10 a program execution component coupled to the program
11 loading component, the program execution component
12 operative to execute the software program stored in
13 optical reader.

1 36. The system of claim 34, wherein the transmission
2 facility includes a computer network.

1 37. The system of claim 34, wherein the transmission
2 facility includes a wireless system.

1 38. The system of claim 34, wherein the transmission
2 facility includes at least one metallic wire.

1 39. The system of claim 34, wherein the transmission
2 facility includes at least one optical fiber.

1 40. The system of claim 40, wherein transmission
2 facility includes a public telecommunications network.

1 41. The system of claim 40, wherein the programming
2 source includes an external computer.

1 42. The system of claim 34, wherein the programming
2 source includes a diskette.

3 43. The system of claim 34, wherein the programming
4 source includes a CD-ROM.

5 44. A method for reprogramming a first optical reader to
6 perform a task performed by a second optical reader, the
7 second optical reader being programmed to perform the task by
8 a parameter table resident in the second optical reader, the
9 method comprising:
10

11 providing an optically encoded menu symbol corresponding
12 to the parameter table; and
13 scanning-decoding the optically encoded menu symbol with
14 the first optical reader to thereby load the
15 parameter table into the first optical reader.

1 45. The method of claim 44, wherein the step of
2 providing further comprises:

3 providing a host computing system;

4 downloading the parameter table from the second optical
5 reader to the host computer; and
6 printing the optically encoded menu symbol.